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EXAMINER	
ROBINSON BOYCE, AKIBA K	
ART UNIT	**PAPER NUMBER**
3628	

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/681,050	CHICKERING ET AL.	
	Examiner	Art Unit	
	Akiba K. Robinson-Boyce	3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/18/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Due to communications filed 8/14/06, the following is a non-final office action. Claims 1-11 and 13-30 are pending in this application and have been examined on the merits. The previous rejection has been withdrawn, and claims 1-11 and 13-30 are rejected as follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1, 8-10, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Bibelnieks et al (US 2003/0208402).

As per claim 1, Bibelnieks et al discloses:

Employing a component to identify the sub-population to solicit and a non-solicited sub-population by using a computer-implemented decision theoretic model constructed to maximize an expected increase in profits, ([0064, asset class/micro class, w/ [0065], shows that once the asset class/micro classes have been determined, the optimization process is performed, thereby mapping out an optimal promotion for

each customer class, w/ [0067], shows an optimization process using a programming model with decision variables for mail or no mail decision of a promotional stream is determined, and also where the objective is to maximize total promotion revenue, where the mail decision represents the class to solicit, and the no mail decision represents the non-solicited class);

Setting a solicitation variable to a first value for each of a plurality of members of the solicitation sub-population and to a second value for each of a plurality of members of the non-solicitation sub-population, ([0067, decision variables represent the mail/no mail decision of a promotion stream).

Soliciting the sub-population identified to solicit, ([0062], promotion p+1 was mailed);

Setting a purchase variable to a first value for each of the plurality of members of the solicitation and the non-solicitation sub-population that made a purchase and to a second value for each of the plurality of members of the solicitation and the non-solicitation sub-population that did not make the purchase, ([0062], each p0 and p+1 entry of the observed cannibalization matrix represent the purchase variables since it represents the observed maximum possible fraction of sales based upon the customers who received both promotions and purchased product).

As per claims 8, 9, 10, Bibelnieks et al discloses:

Wherein soliciting the sub-population identified comprises mailing a solicitation to each of a plurality of members of the sub-population/wherein soliciting the sub-population identified comprises e-mailing a solicitation to each of a plurality of members

of the sub-population/ Wherein soliciting the sub-population identified comprises calling each of a plurality of members of the sub-population, ([0003], first-class mail, e-mail, telemarketing).

As per claim 28, Grosser et al discloses:

A module that receives input regarding a population, ([0040], user interface that comprises keyboard and mouse for inputting information, in this case, the module is inherent since keyboards/mice require modules to function properly on a user interface);

A decision theoretic model that determines a subset of the population to solicit with the advertising and a non-solicited sub-population so as to maximize an expected increase in profits ([0067], shows an optimization process using a programming model with decision variables for mail or no mail decision of a promotional stream is determined, and also where the objective is to maximize total promotion revenue, where the mail decision represents the class to solicit, and the no mail decision represents the non-solicited class);

Means for setting a solicitation variable to a first value for each of a plurality of members of the solicitation sub-population and to a second value for each of a plurality of members of the non-solicitation sub-population, ([0067, using the optimization model to set decision variables, where the decision variables represent the mail/no mail decision of a promotion stream);

Means for setting a purchase variable to a first value for each of a plurality of members of the solicitation sub-population and to a second value for each of a plurality of members of the non-solicitation sub-population, ([0062], each p0 and p+1 entry of the

observed cannibalization matrix represent the purchase variables since it represents the observed maximum possible fraction of sales based upon the customers who received both promotions and purchased product).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-7, 11, 13-27, 29, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bibelnieks et al (US 2003/0208402) as applied to claim 1 above, and further in view of Kohavi (US 6,182,058).

As per claims 2, 5-7,11, 24, 25, 29, 30, Bibelnieks et al discloses:

using a sample of the population to obtain values for the sample of the population for each of a solicitation variable and a purchase variable, the solicitation variable having a first value corresponding to solicitation and a second value corresponding to non-solicitation, and the purchased variable having a first value corresponding to purchase and a second value corresponding to non-purchase, ([0067], shows that a mail or no mail decision of a promotional stream is determined for a class of users, and also where the objective is to maximize total promotion revenue, where the mail decision represents the class to solicit, and the no mail decision represents the non-solicited class);

dividing the sample of the population into a non-solicitation group and a solicitation group and setting the solicitation variable to the first value for each of a plurality of members of the solicitation group and to the second value for each of a plurality of members of the non-solicitation group ([0067, using the optimization model to set decision variables, where the decision variables represent the mail/no mail decision of a promotion stream).

Soliciting the sub-population identified/applying the decision tree against the population to identify the sub-population to solicit..., ([0062], promotion p+1 was mailed);

Setting a purchase variable to a first value for each of the plurality of members of the solicitation and the non-solicitation sub-population that made a purchase and to a second value for each of the plurality of members of the solicitation and the non-solicitation sub-population that did not make the purchase, ([0062], each p0 and p+1 entry of the observed cannibalization matrix represent the purchase variables since it represents the observed maximum possible fraction of sales based upon the customers who received both promotions and purchased product).

Bibelnieks et al fails to disclose constructing a decision tree/Utilizing a component to construct a decision tree as the decision theoretic model from the sample using a predetermined scoring criterion wherein using the decision theoretic model comprises using a decision tree/applying the decision tree against the population to identify the sub-population to solicit.../constructing a decision tree...applying the decision tree, the decision tree having a plurality of paths from a root node to a plurality

of leaf nodes, each of the plurality of paths having a split on a solicitation variable having a first value corresponding to solicitation and a second value corresponding to non-solicitation/the decision tree having a plurality of paths from a root node to a plurality of leaf nodes, each of the plurality of paths having a last split on the solicitation variable, and each of the plurality of leaf nodes providing a value for a probability conditional on at least the purchase variable/wherein each of the plurality of leaf nodes provides a value for a probability conditional on at least the purchase variable having a first value corresponding to purchase and a second value corresponding to non-purchase/wherein identifying the sub-population to solicit further initially comprises performing an experiment using a sample of the population to obtain values for the sample of the population for each of the solicitation variable and a purchase variable, the purchase variable having a first value corresponding to purchase and a second value corresponding to non-purchase, but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However, Kohavi discloses:

constructing a decision tree/Utilizing a component to construct a decision tree as the decision theoretic model from the sample using a predetermined scoring criterion wherein using the decision theoretic model comprises using a decision tree/applying the decision tree against the population to identify the sub-population to solicit.../constructing a decision tree...applying the decision tree/the decision tree having a plurality of paths from a root node to a plurality of leaf nodes, each of the plurality of paths having a split on a solicitation variable having a first value

corresponding to solicitation and a second value corresponding to non-solicitation/the decision tree having a plurality of paths from a root node to a plurality of leaf nodes, each of the plurality of paths having a last split on the solicitation variable, and each of the plurality of leaf nodes providing a value for a probability conditional on at least the purchase variable/wherein each of the plurality of leaf nodes provides a value for a probability conditional on at least the purchase variable having a first value corresponding to purchase and a second value corresponding to non-purchase/wherein identifying the sub-population to solicit further initially comprises performing an experiment using a sample of the population to obtain values for the sample of the population for each of the solicitation variable and a purchase variable, the purchase variable having a first value corresponding to purchase and a second value corresponding to non-purchase, (Col. 3, lines 10-16, Fig. 6 [616], where the solicit value is represented by the make route node a decision node, and the non-solicit value is represented by make route node a leaf node], col. 5, lines 48-52, shows that values are assigned to the facet, w/ col. 10,lines 26-44, shows that the upper facet contains house proposals, and the 3rd pane of the facet contains rejected choices), Kohavi discloses this limitation in an analogous art for the purpose of showing that decision nodes are used to determine a solution for certain attributes.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to utilize a decision tree with the motivation of showing that solutions that come from the decision tree can go through several paths to come up with a solution.

Bibelnieks et al fails to disclose construction the decision tree comprises using a greedy approach, however does disclose a decision-making system that optimizes total promotion revenue in [0067].

However, Kohavi discloses:

wherein construction the decision tree comprises using a greedy approach in Fig.5, [500], in this figure, a plurality of interim leaf nodes shown in [516, 520,524, 528, and 532] are disclosed, which is a greedy approach. Kohavi discloses this approach in an analogous art for the purpose of showing an alternative approach for constructing a decision tree where many decision points will exist.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use a greedy approach with the motivation of using a decision tree that will generate many decision points.

As per claim 3, Bibelnieks et al fails to disclose "wherein the decision tree is constructed such that the split on the solicitation variable of each of the plurality of paths is a last s p l it ",but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However, Kohavi discloses:

wherein the decision tree is constructed such that the split on the solicitation variable of each of the plurality of paths is a last split, (Col. 4, lines 54-67, [when test result = true, classification occurs and a label is output, this represents the last split]). Kohavi discloses this limitation in an analogous art for the purpose of showing that the last split leads to the final decision.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to construct the decision tree such that the split on the solicitation variable represents the last split with the motivation on determining a final decision on the solicitation variable in order to decide who to solicit.

As per claim 4, Bibelnieks fails to disclose "wherein the decision tree is constructed such that the split on the solicitation variable of each of the plurality of paths is a first Split", but does disclose a decision-making system that optimizes total promotion revenue in [0067].However Kohavi discloses:

wherein the decision tree is constructed such that the split on the solicitation variable of each of the plurality of paths is a first Split, (Col. 4, lines 54-67, Fig. 6, [when test result = no, the path will lead back to the beginning of the process]). Kohavi discloses this feature in an analogous art for the purpose of showing that a decision can occur at the beginning of the process.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to construct a decision tree such that the split on the solicitation variable of each of the plurality of paths is a first split with the motivation of showing that a decision with respect to solicitation can occur at the beginning of a process.

As per claim 13, Bibelnieks et al fails to disclose "wherein construction the decision tree comprises using a greedy approach", but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However, Kohavi discloses:

wherein construction the decision tree comprises using a greedy approach in Fig.5, [500], in this figure, a plurality of interim leaf nodes shown in [516, 520,524, 528, and 532] are disclosed, which is a greedy approach. Kohavi discloses this approach in an analogous art for the purpose of showing an alternative approach for constructing a decision tree where many decision points will exist.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use a greedy approach with the motivation of using a decision tree that will generate many decision points.

As per claim 14, Bibelnieks et al fails to disclose "wherein the predetermined scoring criterion is a holdout criterion", but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However, Kohavi discloses:

wherein the predetermined scoring criterion is a holdout criterion, (col. 8, lines 40-42, [holdout]. Kohavi discloses this limitation in an analogous art for the purpose of showing different methods of scoring in order to make a decision.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use holdout criterion with the motivation of using holdout criterion in order to generate a score.

As per claim 15, Bibelnieks et al fails to disclose "wherein the predetermined scoring criterion is a cross-validation holdout criterion", but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However, Kohavi discloses:

wherein the predetermined scoring criterion is a cross-validation holdout criterion, (Col. 8, lines 40-42, [cross-validation]). Kohavi discloses this limitation in an analogous art for the purpose of showing different methods of scoring in order to make a decision.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use cross-validation criterion with the motivation of using cross-validation data in order to generate a score.

As per claims 16, 17, Bibelnieks et al discloses

wherein the predetermined scoring criterion is a marginal likelihood criterion/wherein the predetermined scoring criterion is an adjusted marginal likelihood criterion, ([0012], shows customers most likely to respond to a marketing event are used, also shows how customers are scored using RFM scores, in this case, it is obvious that the scoring criterion can be adjusted since customers continuously change their responses to marketing events, thereby having to adjust the likelihood of their response).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have an adjusted marginal likelihood criterion with the motivation of adjusting criteria to reflect changes in customer habits.

As per claim 18, Bibelnieks et al fails to disclose "wherein the split on the solicitation variable of each of the plurality of paths is a last split", but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However Kohavi discloses:

wherein the split on the solicitation variable of each of the plurality of paths is a last split, (Col. 4, lines 54-67, [when test result = true, classification occurs and a label is output, this represents the last split]). Kohavi discloses this limitation in an analogous art for the purpose of showing that the last split leads to the final decision.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to construct the decision tree such that the split on the solicitation variable represents the last split with the motivation on determining a final decision on the solicitation variable in order to decide who to solicit.

As per claim 19, Bibelnieks et al fails to disclose "initializing the decision tree with an initial single leaf node as the root node, using the greedy approach..., performing a split on the solicitation variable...", but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However Kohavi discloses:

initializing the decision tree with an initial single leaf node as the root node, (Fig. 5 [504]) ;

using the greedy approach to construct the decision tree with no splits on the solicitation variable, the decision tree after construction using the greedy approach having a plurality of interim leaf nodes', and,

performing a split on the solicitation variable at each of the plurality of interim leaf nodes to generate the plurality of leaf nodes, (Fig. 5, [504], shows a plurality of leaf nodes in [516, 520, 524, 528, 532]). Kohavi discloses these limitations in an

analogous art for the purpose of showing how the decision tree branches off into a plurality of decision points.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to initialize the decision tree with an initial single leaf node, to use a greedy approach, and to perform a split on the solicitation variable with the motivation of using a decision tree that will generate many decision points.

As per claim 20, Bibelnieks et al fails to disclose "wherein the split on the solicitation variable of each of the plurality of paths is a first split at the root node", but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However Kohavi discloses:

wherein the split on the solicitation variable of each of the plurality of paths is a first split at the root node, (Col. 4, lines 54-67, Fig. 6, [when test result = no, the path will lead back to the beginning of the process]). Kohavi discloses this feature in an analogous art for the purpose of showing that a decision can occur at the beginning of the process.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to construct a decision tree such that the split on the solicitation variable of each of the plurality of paths is a first split with the motivation of showing that a decision with respect to solicitation can occur at the beginning of a process.

As per claim 21, Bibelnieks et al fails to disclose "initializing the decision tree with the first split at the root node on the solicitation variable, but does disclose a decision-making system that optimizes total promotion revenue in [0067].

However Kohavi discloses:

initializing the decision tree with the first split at the root node on the solicitation variable, (Col. 4, lines 54-67, Fig. 5 [504], [first split to [508] and [512] occurs at the root nod [504]). Kohavi discloses this feature in an analogous art for the purpose of showing that a decision can occur at the beginning of the process.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to construct a decision tree such that the split on the solicitation variable of each of the plurality of paths is a first split with the motivation of showing that a decision with respect to solicitation can occur at the beginning of a process.

using a greedy approach to finish constructing the decision tree, (Fig. 5, [504], shows a plurality of leaf nodes in [516, 520, 524, 528, 532]). Kohavi discloses these limitations in an analogous art for the purpose of showing how the decision tree branches off into a plurality of decision points.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use a greedy approach with the motivation of using a decision tree that will generate many decision points.

As per claim 22, Bibelnieks et al discloses:

Soliciting the sub-population identified, ([0062], promotion p+1 was mailed);

As per claims 23, 27, Bibelnieks et al discloses:

wherein the method is performed by execution of a computer program by a processor from a computer-readable medium, (claim 16, using a processor in a computer-readable environment).

As per claim 26, Bibelnieks et al discloses:

wherein soliciting the sub-population identified comprises one of: calling each of a plurality of members of the sub-population, mailing a solicitation to each of the plurality of members of the sub-population, and e-mailing the solicitation to each of the plurality of embers of the sub-population, ([0003], first-class mail, e-mail, telemarketing).

Response to Arguments

5. Applicant's arguments with respect to claims 1-11, and 13-30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akiba K Robinson-Boyce whose telephone number is 571-272-6734. The examiner can normally be reached on Monday-Friday 9am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7238 [After final communications, labeled "Box AF"], 703-746-7239 [Official Communications], and 703-746-7150 [Informal/Draft Communications, labeled "PROPOSED" or "DRAFT"].

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

A. R. B.
October 30, 2006